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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/960,283	09/24/2001	Takehiko Nakai	684.3256	4769

5514 7590 11/18/2003

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EXAMINER

BOUTSIKARIS, LEONIDAS

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/960,283

Applicant(s)

NAKAI, TAKEHIKO

Examiner

Leo Boutsikaris

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 16-24 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-15 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 11/7/2003 has been entered.

Election/Restrictions

Newly submitted claims 16-24 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

This application contains claims directed to the following patentably distinct species of the claimed invention:

Species I, drawn to claims 1-15, refers to a diffractive optical element having a first diffraction grating with positive optical power and formed on a concave surface, and a second diffraction grating with positive optical power and formed on a convex surface, wherein the thickness of the first grating is smaller than the thickness of the second diffraction grating. Support for Species I can be found in the specification (lines 1-16, p. 17, line 22, p. 18 to line 15, p. 20, and Figs. 2 and 4).

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Species II, drawn to claims 16-24, refers to a diffractive optical element having a first diffraction grating with positive optical power and formed on a concave surface, and a second diffraction grating with positive optical power formed on a convex surface, wherein the thickness of the first grating is larger than the thickness of the second diffraction grating.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 16-24 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Allowable Subject Matter

Claims 1-15 are allowed.

Claims 1-15 are allowable over the prior art of record for at least the reason that the prior art fails to teach or reasonably suggest a diffractive optical element, wherein each diffraction grating is formed on a curved surface of a substrate, and the diffraction grating from among the at least two diffraction gratings, wherein a curvature radius of the curved surface and a curvature

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radius of a grating surface in a portion where a grating pitch is largest, have different signs, is the one which has the smallest grating thickness, as set forth by the claimed combination.

The most pertinent art is Ogawa (US 6,473,232, Fig. 10), wherein two diffraction gratings 23 and 24 are formed on curved surfaces 21a and one (unnamed in the Figure) parallel to 21a, respectively. The grating with the smallest grating thickness is 23 (lines 46-67, col. 10). However, in the above optical element, in the grating with the smaller thickness, 23, and at the region where the pitch is largest (section closest to the axis O), the curvature radius of the curved surface 21a and the curvature radius of the grating surface have the same sign. Cohen (US 5,117,306, Figs. 7- 8) discloses diffraction bifocal lenses wherein two diffraction gratings are accumulated upon each other. However, in the embodiment of Fig. 7, the grating, PL, in which the curved surface thereof and the curved surface of the substrate upon which it is formed, have different signs, is not specified as being the one with the smallest grating thickness; and in the embodiment of Fig. 8, the second grating II is not formed on a curved surface.

It is noted that Applicant has misconstrued Examiner's Reasons for Allowance in indicating that the features of the first grating having thickness larger than the second grating (cited in new claims 16-24) were cited in said Reasons for Allowance. The Reasons for Allowance stated that the grating with the smallest grating thickness is the one that has the property that the curvature radius of the curved surface and the curvature radius of the grating surface in a portion where a grating pitch is largest, have different signs. This corresponds to Figs. 2 and 4, wherein grating thickness $d_1 < \text{grating thickness } d_2$ (see also p. 17 in the specification).

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It appears that Applicant in trying to expand the scope of protection has submitted claims drawn to a species which is distinct from the one claimed in the original application.

Conclusion

This application is in condition for allowance except for the following formal matters: the presence of claims 16-24, which have been withdrawn from consideration as being directed to a non-elected invention.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 703-306-5730 (will be changed to 571-272-2308 after 1/20/2004).

Leo Boutsikaris, Ph.D.
Patent Examiner, AU 2872
November 15, 2003



DREW DUNN
SUPERVISORY PATENT EXAMINER